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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,378	05/20/2004	Koichi Miyachi	1035-510	6503
23117	7590	09/12/2006	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			CHIEN, LUCY P	
			ART UNIT	PAPER NUMBER

2871

DATE MAILED: 09/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments with respect to claim 1-13,15-40 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 1-13,15-40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 6774967) in view of Takeda et al (US 6724452).

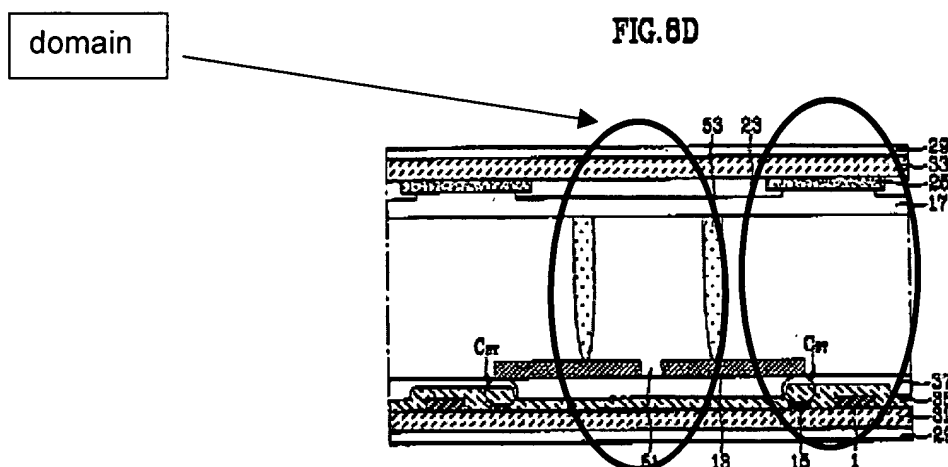
#### *Regarding Claim 1,24,20*

Kim et al discloses (Figure 8D) a pair of substrate (31,33) respectively having electrodes (17,13) on opposing surfaces, the pair of substrates sandwiching a liquid crystal layer (the space between 17 and 13).

A plurality of domains (shown below) formed within a display region when a voltage is applied to the electrodes, the plurality of domains being such that liquid crystal molecules are aligned in different directions from domain to domain, at least one of the electrodes on the pair of substrates having an aperture section (shown below). The liquid crystal layer having a plurality protrusion section (53) which connects the electrodes (17,13)

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In a different embodiment (Figure 14) Kim et al discloses a aperture (51) and protrusion section (53) extending across the liquid crystal layer and which connects the electrodes, and wherein the aperture section is bend in such a manner that sides of the aperture and protrusion section extend in directions which respectively form about  $45^\circ$  with a long side and a short side of the display region, and wherein bent parts of the aperture section are discontinuous.



Kim et al does not disclose the protrusion sections are discontinuous.

Takeda et al discloses (Fig. 51) the protrusion (20A, 20C) are discontinuous (shown protrusions being separated) which are used to be provided in the slit to provide a more stabilized and a fast response speed orientation of the liquid crystal.

It would have been obvious to one of ordinary skilled in the art to modify Kim et al to include Takeda et al's protrusion being discontinuous motivated by the desire to provide a more stabilized and a fast response speed orientation of the liquid crystal. (column 34, rows 5-15).

Regarding Claim 2,25.

Kim et al further discloses (Figure 8D) at least one of the electrodes (13) has a protrusion (53) as the protrusion section within the display region; and a height of the protrusion is identical to a thickness of the liquid crystal layer (shown above).

Regarding Claim 3,26

Kim et al further discloses (Figure 8D) the protrusion (53) is provided to only one of the electrodes on the pair of substrates.

Regarding Claim 4,27.

Kim et al further discloses (Figure 8D) the protrusion is provided to the electrode (17) which opposes the electrode (13) having the aperture section (51).

Regarding Claim 5,28.

Kim et al further discloses (Figure 7A which is the section view of Figure 8D) there are domain boundaries at the protrusion section and at the aperture section, the domain boundaries being boundaries between the domains in which the liquid crystal molecules are aligned in different direction from domain to domain.

Regarding Claim 6,29.

Kim et al further discloses (Figure 7A which is the section view of Figure 8D) the protrusion section is provided outside a region where, in a two-dimensional view, the aperture section is provided.

Regarding Claim 7,30

Kim et al further discloses the protrusion section (53) is made of dielectric material. (Column6, rows 25-28).

Regarding Claim 9,21,32,

Kim et al further discloses the liquid crystal layer has negative dielectric anisotropy. (Column 8, rows 23-28). The liquid crystal molecules are initially aligned vertically with respect to the electrodes. (Column 3, Rows 8-16)

Regarding Claim 10,33

Kim et al further discloses a surface of the protrusion section is subjected to an alignment process which is different from an alignment process of regions other than the surface of the protrusion section.

The applicant is claiming, "a surface of the protrusion section is subjected to an alignment process which is different from an alignment process of regions other than the surface of the protrusion section." There is no affect on the structure therefore the alignment process doesn't affect the patentability of the device itself.

Regarding Claim 11,34,

Kim et al further discloses a surface of the protrusion section is subjected to a horizontal alignment process so that the liquid crystal molecules are initially aligned in parallel with the surface of the protrusion section. (Column 10, rows 60-67, Column 11 1-5).

Regarding Claim 12,35,

Kim et al further discloses an alignment film is provided to the display region of the pair of substrates, whereas no alignment film is provided to a surface of the protrusion section. (Column 10, Rows 39-46)

Regarding Claim 13,36,

Kim et al further discloses (figure 8D) the protrusion section is tilted with respect to a thickness direction of the air of substrates.

Regarding Claim 15,37,

Kim et al further discloses (Figure 7A which is the section view of Figure 8D) the protrusion section (53) is provided in parallel with the aperture section.

Regarding Claim 16-18,38,39

Kim et al further discloses (figure 14) the protrusion and aperture section is substantially V-shaped.

Regarding Claim 19,40

Kim et al further discloses (figure 14) wherein the aperture section includes one or more apertures defined in a pixel electrode.

Regarding Claim 22

Kim et al further discloses (figure 14) wherein the protrusion section is substantially parallel to the aperture section.

Regarding Claim 23

Kim et al further discloses wherein the protrusion section extends across the liquid crystal layer (Fig. 8d) and is made of a different material than is the liquid crystal.

Regarding Claim 8,31,

Kim et al discloses everything as disclosed above.

Kim et al does not disclose the protrusion section is made of a light-shielding material.

Takeda et al disclose (Column 26, Rows 32-38) the protrusion made of light-shielding material to prevent passage of visible light whereby contrast improves.

It would have been obvious to one of ordinary skill in the art, at the time of the invention to modify Kim et al's display to include Takeda et al's protrusion made of light-shielding material motivated by the desire to prevent passage of visible light whereby contrast improves.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.



Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy P. Chien whose telephone number is 571-272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Lucy P Chien  
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Art Unit 2871

  
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